

Plague in the United States of America

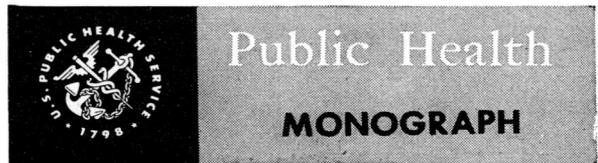
By **VERNON B. LINK, M.D., M.P.H.**

Plague is no longer a dreaded killer on the loose. There are several reasons for this important change in status. Antibiotic and chemotherapeutic agents have been shown to have almost specific curative action. If given early enough, they are capable of holding mortality rates to a very low figure, probably less than 5 percent. This is remarkable even in bubonic plague, since the untreated disease results in about 2 deaths in every three cases, and especially in pneumonic and septicemic plague, for which the mortality used to be practically 100 percent. In addition to these curative measures, there are now available effective rodenticides and insecticides to control the epizootics which occur in domestic rats and which are spread by their fleas. These chemicals are able to break the infection chain between rat and man and minimize the danger of man's becoming infected.

This favorable situation in regard to one of mankind's most ancient and deadly enemies is the result of a great deal of effort by plague fighters all over the world. The arrival at this turning point prompted the author to prepare this monograph in order to record how plague has affected this country, to point out the part that the Public Health Service played in its control, and to highlight the contributions made by Service officers.

Plague has been one of the great epidemic killers of all times. It is given credit for an assist in the downfall of the Roman Empire because of the havoc wrought by the Plague of Justinian. In this great pandemic during the sixth century A. D., an estimated 100,000,000 persons succumbed to the disease. Plague is alleged to have been partially responsible for

speeding up the end of the Middle Ages and hastening the era of Renaissance because of the tremendous impact of its second great pandemic, better known as the Black Death. One out of every four persons in Europe, or about



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The accompanying article summarizes the report on the history of plague in the United States presented in Public Health Monograph No. 26. The author is deputy officer in charge of the Communicable Disease Center, Public Health Service, Atlanta, Ga.

Readers wishing the data in full may purchase copies of the monograph from the Superintendent of Documents, Government Printing Office. A limited number of free copies are available to official agencies and others directly concerned on specific request to the Public Inquiries Branch, Public Health Service. Copies will be found also in the libraries of professional schools and of the major universities and in selected public libraries.

Link, Vernon B.: A history of plague in the United States. Public Health Monograph No. 26 (Public Health Service Publication No. 392). U. S. Government Printing Office, Washington, D. C., 1955. Price 60 cents.

25,000,000 of the population of that continent, are conservatively said to have died from the Black Death, and uncounted millions died in the other continents of the world. Even in modern times, in the third great pandemic, which started in 1894 and which still hasn't quite burned itself out, plague has continued to exhibit its enormous killing capacity with a reported death toll to date of about 13,000,000 victims.

This third great pandemic had its origin in the Yunnan Province of China, resulting in an epidemic focus in Canton in 1894. From there it spread to Hong Kong and subsequently to nearly every country in the world. It invaded India in 1896 and in a few years was causing over a million deaths a year.

It is no wonder, then, that the occurrence of a death from plague in March 1900 in San Francisco, Calif., was viewed with serious alarm by the local, State, and Federal public health officials of this country. For 6 years the pandemic had been spreading from its epidemic foci in China, and country after country had become involved. Not much could be done to prevent this spread because so little was known about the disease.

The causative organism, *Pasteurella pestis*, had been identified in 1894. Vaccines and serums had been prepared which were of some value in prevention and treatment but were not always effective. Practically nothing was known about the way in which the disease was transmitted, what the reservoir hosts were, or whether an insect vector was involved. Because of this lack of knowledge and the absence of effective preventive and therapeutic measures, panic and hysteria usually followed outbreaks of the disease. This was the situation when plague first invaded this country in 1900.

In those days, the Public Health Service, known then as the Marine-Hospital Service, was much smaller than it is today and there was a personal touch in its work that is somewhat lacking now. This was reflected in *Public Health Reports* and the annual report of the Surgeon General, both of which contained copies of orders, telegrams, letters, and reports

concerning current public health problems. By careful study of these publications it is easy to follow the story of the epidemics that occurred, developed, and were brought under control in this country. As the years went by the Public Health Service grew to the point where it was not possible to record all of its activities in such detail in *Public Health Reports* and the annual report and, as a result, it is much more difficult to follow the course of events which have occurred in more recent years. For example, these sources do not reflect adequately the tremendous amount of effort exerted by the Service's Plague Laboratory in the period from 1936 to 1950, when practically the entire western half of the United States was routinely surveyed for evidence of plague infection among wild rodents and their fleas.

Another source of material for this monograph is the papers on plague published by the Public Health Service officers. These are relatively large in number when one considers the fact that there have been only 523 cases of human plague in this country.

This monograph tells a story of successful efforts against a major disease even in the days when the more specific preventive and therapeutic measures were not available. It summarizes control efforts in San Francisco, Seattle, New Orleans and other Gulf Coast cities, Los Angeles, Hawaii, and Puerto Rico. It highlights the efforts made to rid seagoing vessels of rats and to keep them that way. Finally, it points out the residual hazards inherent in the fact that the wild rodents of 17 of the westernmost States are still infected with plague and could be the source for reinfection of domestic rodents in western cities.

The final chapter in the fight against plague in this country cannot yet be written. It will be possible to do so only when a biologically feasible and economically practical method can be developed to rid the western United States of its plague infection in wild rodents. In the meantime, constant vigilance will have to be maintained in order to prevent plague from initiating epizootics among rats of western cities.